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(54) Skate guard

(57) Skate guard (1, 31) comprising a portion (2) protecting along the entire blade of a skate and provided with a blade slot (4), a form locking device (5) at the front end of the skate guard and locking means (3, 33) mounted in/on the skate guard by which the guard (1, 31) is removably held against the skate blade, the form locking device (5) of the skate guard (1, 31) being formed with a point locking means (6) provided with a recess (7), which means (6) is arranged to hold the point of a skate blade vertically and to admit turning of the blade around the point thereof in spite of the vertical holding. The locking means (3) comprises an upwardly extending resilient tongue (14) for locking the rear portion of the skate guard (1) against a skate blade or a magnet system (34) consisting of two equally long aligned permanent magnets (35, 36) with the north end of one magnet facing the south end of the other magnet and with a distance D between the magnets, where D is 1/5 of the length L of one magnet (35, 36).

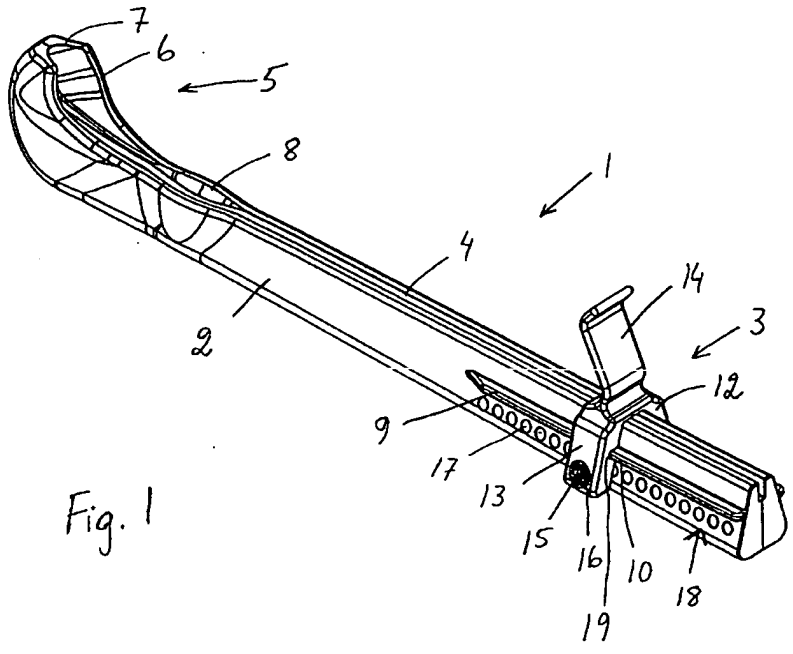

Fig. 1

EP 1 112 760 A1

Description

Technical field

[0001] The present invention relates to a skate guard arranged to be removably attached to a skate blade.

Background of the invention

[0002] Since long, many different types of skate guard are known, which guards are arranged to be removably attached to a skate blade. Most of these previously known guards require that the user uses his hands both when removing the guard from the blade and especially when attaching the guard to the blade, since the locking device necessitates this. However, there are previously known guards, cf. US patent 4 382 615 (corresponding to SE 435 900), which enable a user to apply the guard without using his hands, i.e. skate guards of the "step-in" type which the user steps into, whereupon the guard is locked in the same instant. As may be seen from US 4 382 615, this guard is divided into two parts and is telescopically adaptable to varying blade lengths, the locking to a predetermined length taking place by means of through screws. Further, it is evident from the said document that the application of the guard takes place in that the user steps into the guard with the rear end of the skate blade first, whereupon the skate and thus the blade is slanted downwardly, the front end thereof sliding downwards over an S-shaped resilient retaining element which snaps on around a portion of the skate located over the blade.

[0003] A disadvantage of a guard like this is that from the production technical point of view it is an expensive and unnecessarily complicated configuration in two parts. Another disadvantage is the difficulty to "aim" the rear portion of the skate blade correctly when applying the guard owing to the skate and the leg blocking the point of insertion of the skate blade, meaning that the user must "aim" at the blade slot with the rear end of the blade from the rear or from the side.

Object of the invention

[0004] The object of the invention is to provide a skate guard of the "step-in" type eliminating the disadvantages associated with previous skate guards of this type. Thus, the object is to provide a less complicated and less expensive production of guards which are easy to attach and remove without using one's hands, and which are held in a better way against the skate and are easy to adapt to varying blade lengths. Another object of the invention is to provide a skate guard of the "step-in" type intended for first fitting the front portion of the skate into the guard and then snapping the rear portion of the blade, i.e. the heel, into the guard.

Summary of the invention

[0005] The object of the invention is achieved by a skate guard according to any of the attached claims.

[0006] Common to all of the below described embodiments is that the technique of applying the guard is the opposite as compared to the previously known technique, i.e. instead of applying the guard by means of a forwardly rolling movement of the foot, a rearwardly rolling movement of the foot is used. Thus embodiments within the scope of the invention make it possible to "find" the blade slot using the toe instead of the heel, which allows much greater control and swiftness.

[0007] The skate guard consists of a portion protecting along the entire blade of a skate, which portion is provided with a blade slot, a form locking device at the front end of the skate guard and locking means disposed in/on the skate guard by which the guard is removably held against the skate blade. The form locking device of the skate guard is formed with a point locking means provided with a recess, which means is arranged to hold the point of a skate blade vertically and to allow the blade to turn around its point, in spite of its being vertically held.

[0008] In its front portion, the blade slot is provided with a slot widening arranged to receive the front point of the skate blade when applying the guard, the blade slot being arranged to bring the point to slide forwardly towards the form locking device, and the locking means being provided to be activated when the entire blade is slanted downwardly into the blade slot. The slot widening may either be provided in the material of the guard or formed as a bulging of the guard. Further, the blade slot is inclined forwardly, the perpendicular distance in a section from its base to a plane supporting the standing guard being greater at the rear end of the guard than at the front end thereof. A measure of said inclination is that the perpendicular distance from the said plane to the base is at least twice as big at the rear end of the guard as at the front end.

[0009] Further, the rear portion of the skate guard on either side is provided with stiffening elements for a locking device, which stiffening elements extend in the longitudinal direction of the guard and which can also serve as guide means for the locking device.

[0010] One embodiment of the skate guard locking means includes a clamp mounted over the rear portion of the guard with one leg on either side of the guard. The clamp is provided with an S-shaped resilient tongue extending upwardly on the clamp for locking the rear portion of the skate guard against a skate blade. The clamp is also transversely slidable along the guard and is arranged to be fixed along the blade by fixing means in the form of, for instance, a screw and a nut inserted into leg holes and through a hole in a row of holes provided in the guard. It is hereby possible to adjust the guard to varying blade lengths. In addition, each leg is arranged to be guided in grooves disposed on the inside of the

leg by guide means extending longitudinally on the guard to prevent turning of the clamp around its fixing means.

[0011] A second embodiment of the skate guard locking means includes a magnet system comprising two equally long aligned permanent magnets with the north end of one magnet facing the south end of the other magnet and with a space D between the magnets, where D is 1/5 of the length of one magnet. This geometry is selected in order for the magnet system to have an optimal effect against a skate blade. The magnet system is mounted on a magnet plate which is arranged to be inserted by snap action from the exterior of the guard into a system cassette in the guard. Further, a cover plate is arranged to cover the system cassette in which the magnet plate is mounted by snap action from the exterior. The cover plate may be provided with, for example, the trademark of the guard or may provide an advertising space.

[0012] Common to embodiments within the scope of the invention is also that the skate guard locking means is disposed on the rear two thirds of the guard.

Brief description of the drawings

[0013] The invention will now be further explained using reference figures in connection with the attached drawings, in which

Figure 1 is a perspective view of a first embodiment of a skate guard according to the invention,
Figure 2 is a plan view of the guard of Figure 1,
Figure 3 is a perspective view of a second embodiment of a skate guard according to the invention,
Figure 3a shows the magnet system according to the embodiment of Figure 3,
Figure 4 shows a detail of the embodiment of Figure 3, and
Figure 5 is a rear plan view of the embodiment of Figure 3.

Description of the invention

[0014] Figure 1 is a perspective view of a first embodiment of a skate guard 1 according to the invention. The guard is completely covering, i.e. it covers a skate blade from the front end to the rear end thereof. The portion covering the skate blade is formed as a unitary protective portion 2 on which a locking means 3 is mounted. The skate guard is provided with an upwardly open blade slot 4 intended to receive the skate blade when the guard is mounted. At its front end, the guard is also provided with a form locking device 5 which is formed with a point locking means 6 having a recess 7. The point locking means is formed as a hollow globular portion tapering upwardly, which can grip around a section of the front portion of the skate blade. The recess is provided in the upper side of the globular portion in order to fit several types of skate blade and to make possible a rotary motion of the skate with its blade in an imagined vertical plane through the blade slot. The configuration of the point locking means 6 with its recess 7 is such that the point of the skate blade is held so as to be prevented from moving vertically in spite of the blade being able to turn around its point.

[0015] The blade slot is also provided with a slot widening 8 in the front portion of the guard. The slot widening is intended to widen the slot to make it easier to fit in the front point of the skate blade and to indicate a position for receiving the point when attaching the guard. The blade slot is inclined to facilitate sliding forwardly of the point towards the form locking device. The surface of the slot, in its entirety or in the front portion only, may also be coated with a layer of TEFLON® or other friction reducing material or means.

[0016] Additionally, the rear end of the protective portion 2 is provided with fixed stiffening elements 9 extending in the longitudinal direction of the guard, which elements also act as guide means 10 for the locking means 3.

[0017] The locking means 3 includes a clamp 12 mounted over the rear portion of the guard with a leg 13 on either side of the guard. The clamp 12 is provided with an upwardly extending resilient tongue 14 for locking the rear portion of the skate guard against the blade of a skate. The clamp 12 is transversely slidable along the guard and is arranged to be fixed along the guard by fixing means 15 inserted into leg holes 16 and through a hole 17 for longitudinal adjustment in a row 18 of holes provided in the guard. Each leg 13 is arranged to be guided by means of guide means 10 extending longitudinally on the guard, as indicated above, to avoid turning of the clamp 12 around its fixing means 15. The guide means 10 extend on the inside of each leg 13 in a leg groove 19.

[0018] Figure 2 is a plan view of the skate guard of Figure 1 showing that the guard is provided with cross bars 21 which increase friction when walking with the guard attached and which are spaced over the entire guard with the exception of a central area on the underside of the guard. As may be seen from the Figure, the cross bars are also located upwardly round the form locking device 5. As may also be seen from the Figure, the resilient tongue 14 is "S"-shaped but may of course be of any other advantageous configuration depending on its ability to hold the blade and the rear portion of the skate.

[0019] In the Figure there is also shown, by means of a dotted line, the forwardly inclined blade slot 4 of the skate relative to a plane P supporting the standing guard. The Figure shows the perpendicular distance A from the base of the blade slot 4 to the plane P. The blade slot 4 is formed such that the distance A_b at the rear portion of the blade groove is at least twice as big as the distance A_f at the front portion of the blade slot. The blade slot 4 is thus inclined forwardly towards the

form locking device 5. This inclination implies a tendency of the skate blade to slide towards the form locking device 5 during walking. Said tendency to slide may be enhanced by coating the base of the blade slot with friction reducing material or means as mentioned above. This tendency to slide forwardly counteracts sliding in a rearward direction which could result in the guard separating from the blade.

[0020] Figure 3 shows a perspective view of a second embodiment of a skate guard 31 according to the invention. Basically, the guard is constructed exactly as the guard according to the first embodiment of Figures 1 and 2, however, with the difference that its locking means 33 consists of a magnet system 34, see Figure 3a. The magnet system comprises two equally long aligned permanent magnets 35, 36, the north end of one magnet facing the south end of the other magnet and with there being a distance D between the magnets, where D is 1/5 of the length L of one magnet. The magnet system is mounted on a magnet plate 37 which, in turn, is attached to a supporting plate 38. The supporting plate with the magnet system is arranged to be snapped into a system cassette 39 in the skate guard from the outside thereof via three fastening knobs K, see Figure 3. Further, a cover plate 40 is arranged to cover snappingly from the outside the supporting plate 38 and the system cassette in which the magnet plate 37 is mounted.

[0021] Figure 4 shows the system cassette 39 on a cover according to Figure 3 without the cover plate 40 and the magnet system 34. The lower part of the cassette is provided with three holes H for the three knobs of the supporting plate. Further, in the upper part of the cassette there are magnet compartments 41, 42 which are separated by a magnet spacer 43. As may be seen from the Figure, the magnet plate with the magnets is recessed into the cassette.

[0022] Figure 5 is a rear view of the second embodiment according to Figure 3. Since the basic configuration of the guard is identical for both of the described embodiments, the Figure shows the common appearance of the form locking device 5 of the embodiments. The Figure clearly shows the hollowly spherical configuration of the means for gripping around the front point of a skate blade in order to prevent the point from moving vertically in the form locking device 5 on application of the guard, which would cause the guard to separate from the skate. The Figure also shows that the profile of the guard is essentially an equally sided parallell trapezoid with its upper base shorter than its lower base and with a height which is bigger than its lower base. This profile applies to the entire length of the guard.

Claims

1. Skate guard (1) consisting of a portion (2) protecting along the entire blade of a skate and provided with a blade slot (4), a form locking device (5) at the front end of the skate guard and locking means (3) mounted in/on the skate guard, by means of which the guard (1) is removably held against the skate blade, characterized in that the locking means (3) comprises an upwardly extending resilient tongue (14) for locking the rear portion of the skate guard (1) against a skate blade.

2. Skate guard according to claim 1, characterized in that the resilient tongue (14) is disposed on a clamp (12) mounted over the rear portion of the guard with one leg (13) on either side of the guard (1).

3. Skate guard according to any of claims 1 - 2, characterized in that the clamp (12) is transversely slidable along the guard (1) and that the clamp (12) is arranged to be fixed along the guard (1) by fixing means (15).

4. Skate guard according to claim 3, characterized in that the fixing means (15) are inserted in leg holes (16) and through a hole (17) for longitudinal adjustment in a row of holes (18) provided in the guard (1).

5. Skate guard according to any of claims 3 - 4, characterized in that each leg (13) is arranged to be guided by guide means (10) extending longitudinally on the guard in order to avoid turning of the clamp (12) around its fixing means (15).

6. Skate guard (1, 31) consisting of a portion (2) protecting along the entire blade of a skate and provided with a blade slot (4), a form locking device (5) at the front end of the skate guard and locking means (3, 33) mounted in/on the skate guard, by which locking means the guard (1, 31) is removably held against the skate blade, characterized in that the locking means (33) includes a magnet system (35, 36) consisting of two equally long aligned permanent magnets (35, 36) with the north end of one magnet facing the south end of the other magnet and with a distance D between the magnets, where D is 1/5 of the length L of one magnet (35, 36).

7. Skate guard according to claim 6, characterized in that the magnet system (34) is mounted on a magnet plate (37) which is arranged to be snapped from the outside of the guard into a system cassette (39) in the guard (31).

8. Skate guard according to claim 7, characterized in that a cover plate (40) is arranged to cover by snap action from the outside the system cassette (39) in which the magnet plate (37) is mounted.

9. Skate guard (1, 31) according to any of claims 1 - 8, characterized in that the form locking device (5) of the skate guard (1, 31) is formed with a point lock-

ing means (6) provided with a recess (7), which means (6) is arranged to hold the point of a skate blade vertically and to admit turning of the blade around its point in spite of the vertical holding.

10. Skate guard according to any of claims 1 - 9, characterized in that the blade slot (4) in its front portion is provided with a slot widening (8) arranged to receive the front point of the skate blade on application of the guard (1, 31) , the blade slot (4) being arranged to bring the point to slide towards the form locking device (5), and the locking means being arranged to be activated when the entire blade is slanted downwardly into the blade slot (4).

11. Skate guard according to any of claims 1 - 10, characterized in that the blade slot (4) of the skate guard (31) is inclined forwardly, the perpendicular distance (A) from its base to a plane (P) supporting the standing guard (1, 31) being bigger at the rear end of the guard (1, 31) than at the front end of the guard (1, 31).

12. Skate guard according to claim 11, characterized in that the perpendicular distance of the blade slot (4) from the plane (P) to its base is at least twice as big at the rear end of the guard (1, 31) as at its front end.

13. Skate guard according to any of claims 1 - 12, characterized in that the rear portion of the skate guard (1, 31) on either side thereof is provided with stiffening elements (9) extending in the longitudinal direction of the guard (1, 31).

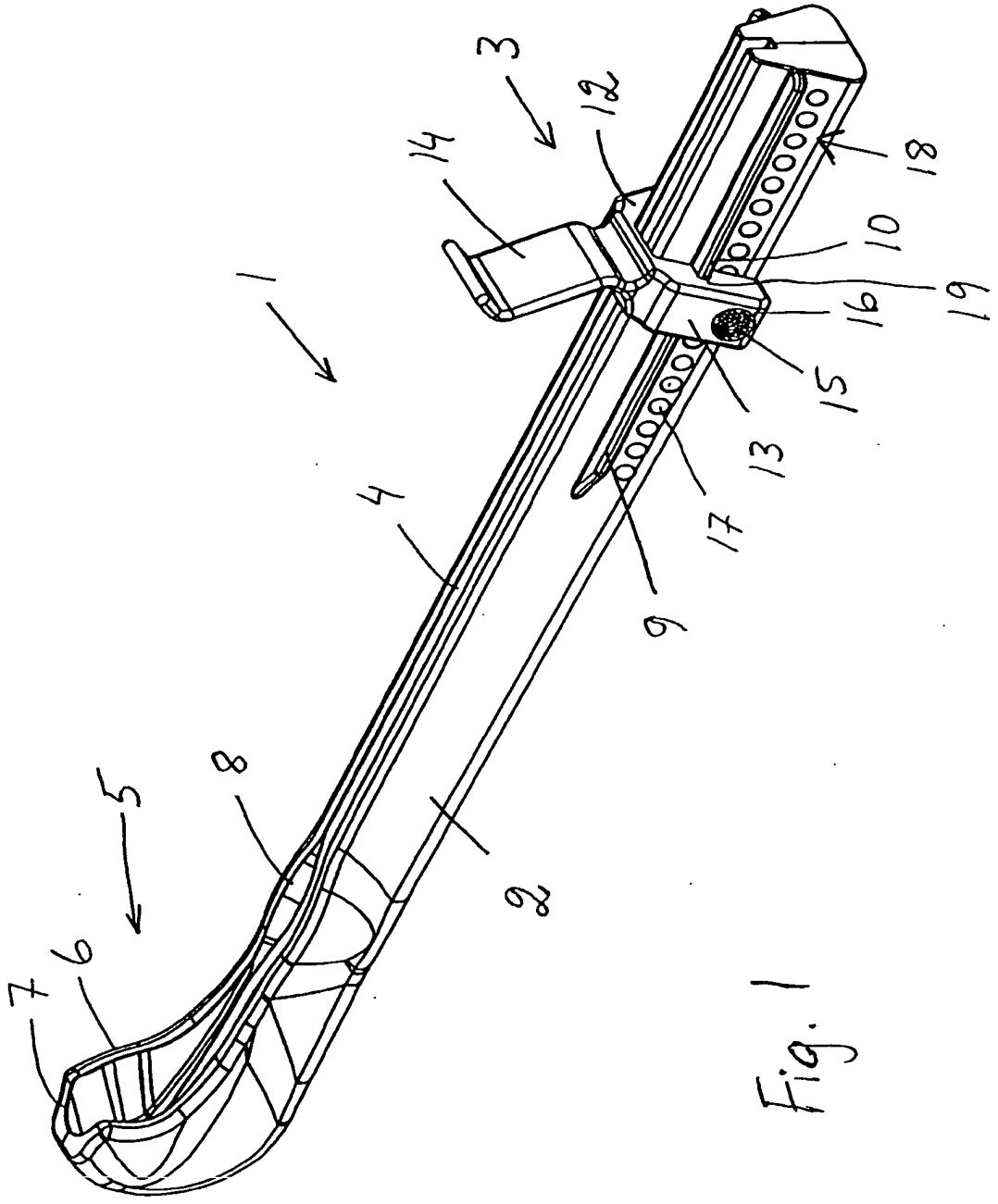

Fig. 1

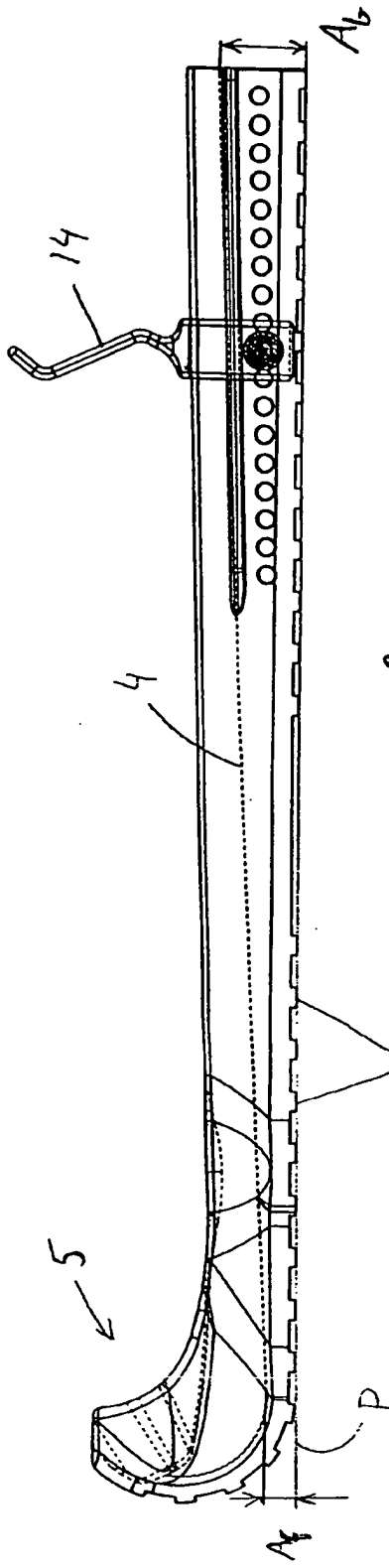

Fig. 2

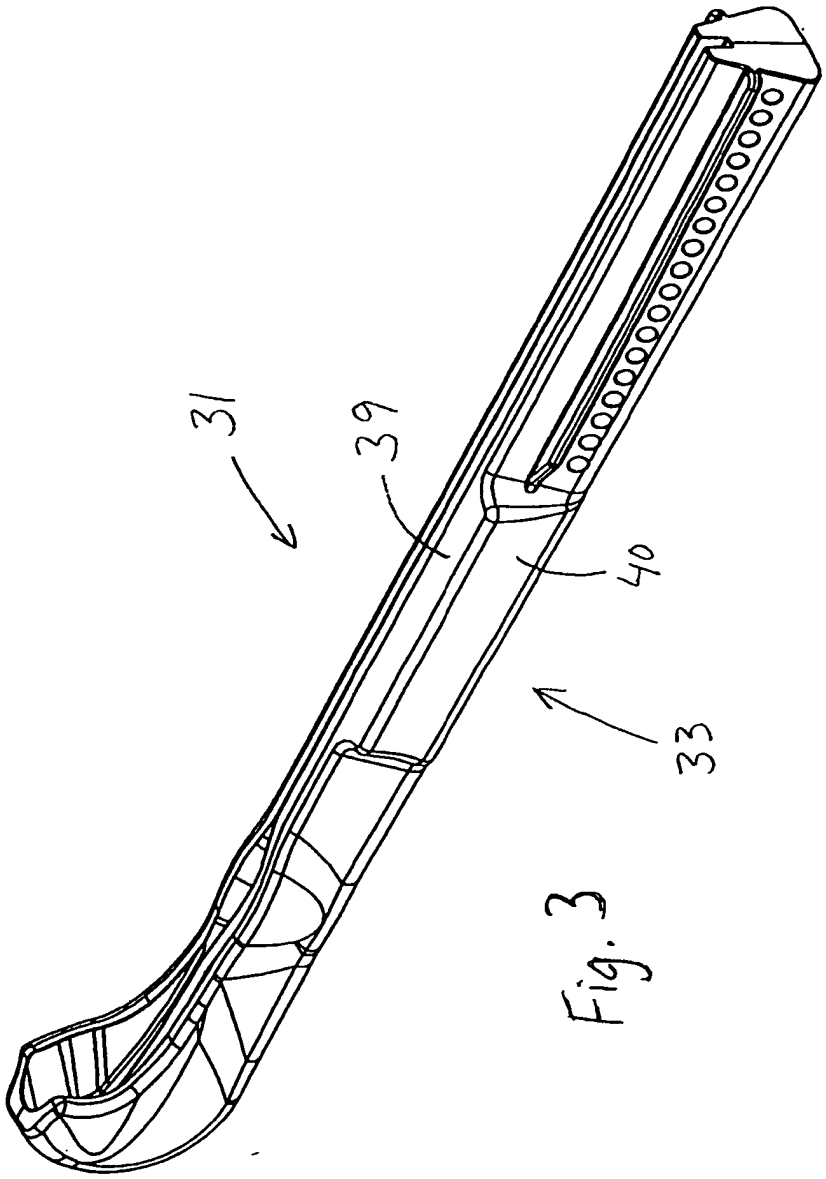

Fig. 3

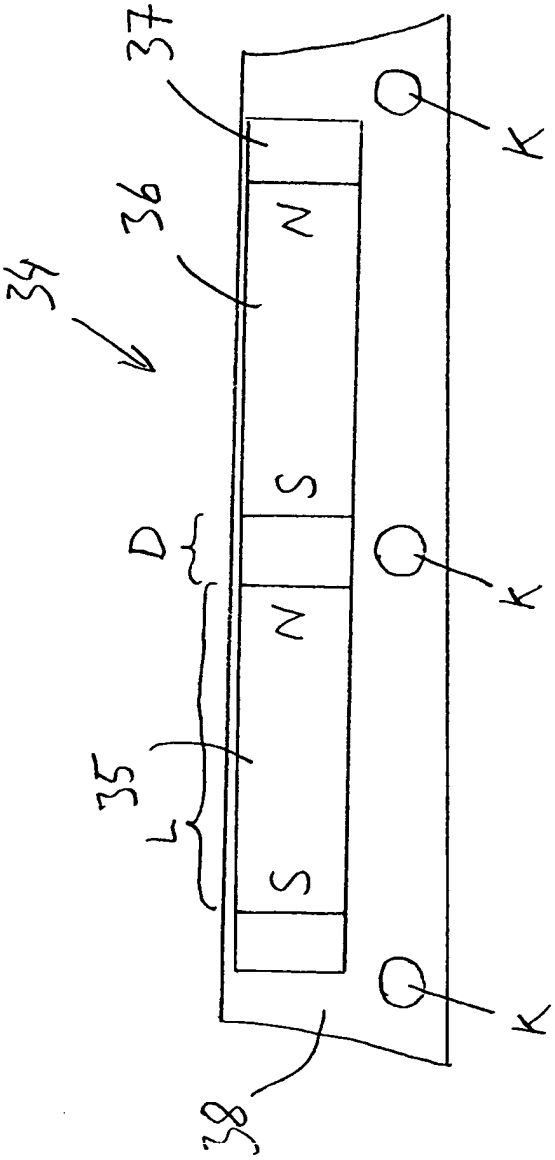

Fig. 3a

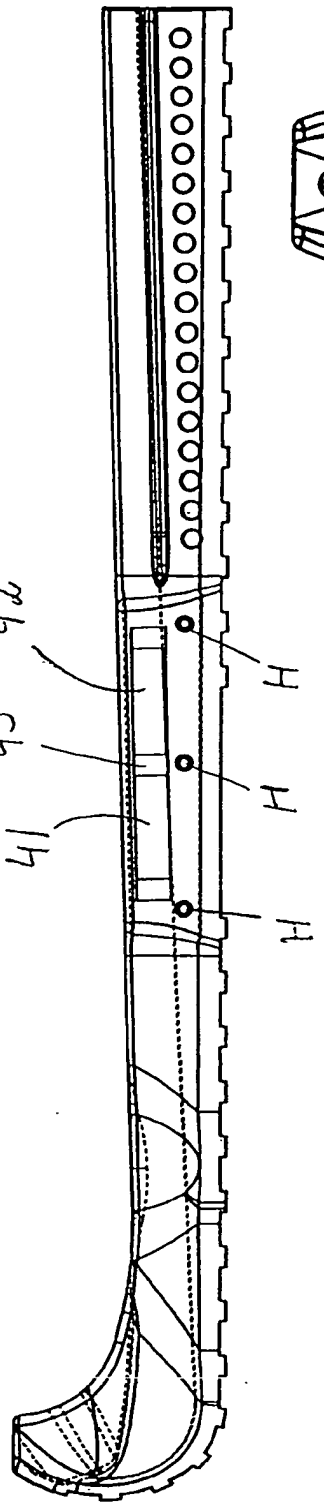

Fig. 4

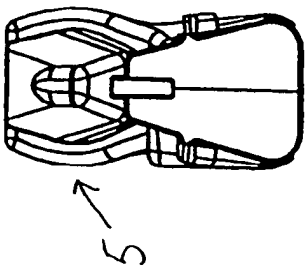

Fig. 5

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 85 0204

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 4 382 616 A (OLIVIERI) 10 May 1983 (1983-05-10) * figures 1,2,5 *	1-4	A63C3/12
X	CH 362 022 A (BUCHMÜLLER) 15 May 1962 (1962-05-15) * page 1, column 1, paragraph 7 - column 2, paragraph 1; figures 1,3 *	1,2	
X A	US 2 642 291 A (CONDON) 16 June 1953 (1953-06-16) * column 2, line 42 - line 47; figures 1,2 *	1 2,3,9,11	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A63C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	5 April 2001	Steegman, R

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 85 0204

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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05-04-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4382616 A	10-05-1983	NONE	
CH 362022 A	15-05-1962	NONE	
US 2642291 A	16-06-1953	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82